

**WHAT IS CLAIMED IS:**

1. A liquid crystal electro-optical device comprising:  
a pair of substrates at least one of which is transparent;  
a light modulating layer interposed between the pair of substrates, the light  
5 modulating layer including a liquid crystal, an optically active substance, and a  
dichroic dye; and  
means for applying an electric field in a direction parallel with the pair of  
substrates.
2. A liquid crystal electro-optical device according to claim 1 wherein the  
10 dichroic dye is a positive type.
3. A liquid crystal electro-optical device according to claim 1 wherein the  
liquid crystal has positive dielectric constant anisotropy.
4. A liquid crystal electro-optical device according to claim 1 wherein the  
liquid crystal has a spiral pitch  $p$  [ $\mu\text{m}$ ] in a range of  $1 \leq p \leq 15$ .
- 15 5. A liquid crystal electro-optical device according to claim 1 wherein a  
cell thickness  $d$  [ $\mu\text{m}$ ] is in a range of  $1 \leq d \leq 10$ .
6. A liquid crystal electro-optical device according to claim 1 wherein  
molecules of the liquid crystal have an orientation twist angle  $n$  in a range of  $n \leq$   
 $300^\circ$ .
- 20 7. A liquid crystal electro-optical device according to claim 1 wherein an  
interelectrode distance  $L$  of the electric field applying means is in a range of  $L < 25$   
 $\mu\text{m}$ .
8. A liquid crystal electro-optical device comprising:  
a pair of substrates at least one of which is transparent;  
25 a light modulating layer interposed between the pair of substrates, the light

modulating layer including a liquid crystal that contains a dichroic dye;

means for applying an electric field in a direction parallel with the pair of substrates; and

5 means provided on at least one of the pair of substrates, for orienting the light modulating layer.

9. A liquid crystal electro-optical device according to claim 8 wherein the dichroic dye is a positive type.

10. A liquid crystal electro-optical device according to claim 8 wherein the liquid crystal has positive dielectric constant anisotropy.